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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,781	09/16/2003	Christophe Maleville	4717-6100	4844

28765 7590 02/24/2005

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EXAMINER	
CARRILLO, BIBI SHARIDAN	
ART UNIT	**PAPER NUMBER**
1746	

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/664,781	MALEVILLE ET AL..	
	Examiner	Art Unit	
	Sharidan Carrillo	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 November 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6 and 11-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 11-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 15 and 22 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitations of "approximately 500" constitutes new matter since the specification on page 6 teaches "about 500".

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-6 and 11-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite because it is unclear how the adhesive surface is produced. It is unclear how the method steps produce the adhesive surface on the substrate. It is unclear how the wet etching in combination with the ozone produces an adhesive surface on the substrate.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-6, 11-12, 16-19 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al. (US2003/0087532) in view of Kenny et al. (US2002/0157686).

Wu et al. teach etching and oxidizing a semiconductor substrate. In reference to Claims 1, 11, 16, and 23 refer to paragraphs 13 and 44. The limitations of a hydrophobic surface and hydrophilic surface are inherently met as a result of performing the same method steps as that of the instantly claimed invention. In view of the indefiniteness of claim 1 with respect to the adhesive surface, the limitations are inherently met since Wu et al. are performing the same method steps as that of the claimed invention. In reference to claims 2-3, and 17 refer to paragraphs 12 and 37. In reference to claims 4-5 and 18-19, refer to paragraph 57. In reference to claims 12 and 24 refer to paragraphs 28 and 29.

In reference to claims 1 and 6, Wu et al. fail to teach immersing the workpiece in a closed container. Kenny et al. teach a method and apparatus for treating a semiconductor wafer with chemical solutions which include HF and ozone. In Fig. 1, Kenny teaches a closed container. In paragraph 38, Kenny teaches treating the workpiece by conventional means which includes immersion and spraying. It would have been obvious and within the level of the skilled artisan to have modified the method of Wu et al. to include immersion of the workpiece in a closed container, as taught by Kenny et al., since such processing steps are conventional and notoriously applied to the cleaning, treatment, and manufacture of semiconductor wafers.

9. Claims 13-15 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al. (US2003/0087532) in view of Kenny et al. (US2002/0157686), as applied to claim1-6, 11-12, and 16-24 above, and further in view of Geusic (US6630713).

Wu et al. teach the invention substantially as claimed with the exception of bonding the etched surface and annealing at a temperature of 500 degrees centigrade. Geusic teaches a method of bonding one semiconductor surface to a second semiconductor surface. In col. 4, lines 20-30, Geusic teaches it is convention to anneal surfaces at a temperature of at least about 500 degrees centigrade. In col. 5, lines 20-60, Geusic teaches etching the wafer surface with HF solution and further teaches bonding the wafer prior to annealing in order to retain cleanliness of wafer surfaces. It would have been obvious to a person of ordinary skill in the art to have modified the modified method of Wu et al. to include bonding and annealing since such steps, as taught by Geusic are conventional in the semiconductor manufacturing process. Additionally, applicant's own specification (page 6) teaches that the limitations of laying one wafer on top of another and applying pressure are conventional steps used in wafer bonding. In reference to bond strength, one of ordinary skill in the art would reasonably expect the annealing to increase the bond strength to between 0.28 to 0.38 since Geusic is performing annealing at the same temperature as that of the instantly claimed invention.

Response to Arguments

10. Applicant argues that Wu fails to teach a method of producing an adhesive surface. The burden is shifted on applicant to show why the same method steps of Wu would not result in a adhesive surface being formed. Additionally, applicant has not addressed how the method steps produce the adhesive surface. The claim is silent with respect to how the adhesive layer is formed and fails to positively recite forming an

adhesive layer. Additionally, page 4, line 14 of the specification teaches that by performing these steps the substrate produced has good adhesion characteristics as a result of the surface being cleaned. Therefore, the examiner sees no difference between the prior art and that of the instantly claimed invention since Wu is performing the same method steps to produce a clean wafer surface. A clean wafer surface would have good adhesive properties since the contaminants have been removed from the wafer surface.

11. Applicant argues that Wu fails to teach directly exposing the etched hydrophobic surface to a gaseous atmosphere. Applicant is directed to paragraph 17 which teaches that ozone contacts portions of the substrate exposed to the etch with BOE.

12. In reference to a closed container, the secondary reference of Kenny et al. is relied on to cure the deficiency. In reference to Konishi, all arguments are deemed moot in view of the withdrawal of the reference.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharidan Carrillo whose telephone number is 571-272-1297. The examiner can normally be reached on Monday-Friday, 6:00a.m-2:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sharidan Carrillo
Primary Examiner
Art Unit 1746

bsc

SHARIDAN CARRILLO
PRIMARY EXAMINER